

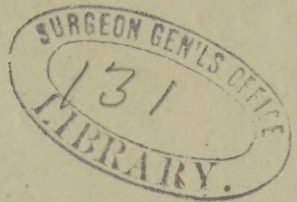
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CHRONIC BRIGHT'S DISEASE IN CHILDREN
CAUSED BY MALARIA.

BY

SAMUEL C. BUSEY, M.D.,

DISTRICT OF COLUMBIA.



EXTRACTED FROM THE
TRANSACTIONS OF THE AMERICAN MEDICAL ASSOCIATION.

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COLLINS, PRINTER, 705 JAYNE STREET.
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CHRONIC BRIGHT'S DISEASE IN CHILDREN CAUSED BY MALARIA.

IN a contribution to the *American Journal of the Medical Sciences* (vol. lxxv. p. 123, 1873) I reported several cases of renal disease occurring in children, and believed to have been caused by chronic malarial poisoning. These cases, with one exception, were acute forms of disease, which I thought were curable. In supplementing that contribution I submit the report of three cases of the more chronic and incurable forms of renal disease.

Malaria has been recognized by most authors on kidney affections as an occasional cause, but no one has offered a satisfactory explanation. The general opinion is that the renal disease is secondary, and the immediate effect of blood impoverishment, which is always a characteristic of the malarial cachexia. Whatever may be this relation of cause and effect, one fact is exhibited in all the cases which have come under my observation, that is, that renal disease only occurs as a complication or sequence of miasmatic diseases in those cases which have been either neglected or imperfectly treated. The history of every case shows that the periodic attacks recurred at shorter or longer intervals for a period of several months or years, proving conclusively that the treatment, if any, had been limited to the arrest of a paroxysm or to the interruption of their regular recurrences for a brief period. It is not surprising that cases thus neglected should terminate in some serious organic disease of the liver, spleen, or kidneys. These results are, perhaps, more properly attributable to the blamable neglect of the patient, rather than to any relationship of cause and effect subsisting between miasmata and renal disease.

Another point, of special interest to the clinician, refers to the proper management and medication of the chronic forms.

Cure may be beyond the resources of science, but life may be prolonged for an indefinite period. How best to accomplish this is the important consideration. As a contribution to this branch of the subject I offer the following reports, together with the details of the treatment of each case, and a general summary of my experience in the therapeutic management of similar cases of chronic renal disease.

CASE I.—Harriet R., aged thirteen years, white, admitted to the Children's Hospital, June 30, 1877. Had never had scarlet fever. Two years before a sister and, in August, 1876, her mother had died of dropsy. Six months previous to admission Harriet had chills, which were followed by swelling of the lower extremities and abdomen. Under treatment, these swellings had disappeared. Now has ascites and general anasarca; enlargement of the liver and spleen. Urine passed, 12 ounces. The analysis was omitted from the record. This patient remained in the hospital until September 30, 1878, when she absconded in apparent good health.

At first the treatment consisted of a nutritious diet, a diuretic of sweet spirits of nitre in infusion of juniper berries, and the citrate of iron and quinine; but the anasarca increased, and on August 1st 15 grains of jaborandi were given in infusion three times a day, followed by considerable increase in the quantity of urine, and the gradual disappearance of the fluid accumulations. This, so far as I know, was the first time this drug was administered in such a case. During her long residence in the hospital, it was several times given upon the reappearance of the œdema, with the same good effect. On two different occasions the *blatta orientalis* was employed with the effect each time of diminishing the amount of urine. At five different times she suffered from uræmic intoxication, which was preceded by a most remarkable dilatation of one, usually the right, or both pupils, and followed by great irritability lasting for a few hours, then screaming, and terminating in unconsciousness. These attacks were always speedily relieved by free diaphoresis, produced by a hot air bath, which was accomplished by packing about her person under cover a number of bottles filled with hot water. As they cooled they were refilled and reinstated, so that a continuous high temperature was maintained as long as desired.

During her stay in the hospital she passed safely through an attack of measles.

CASE II.—John O'L., aged 10 years; white; admitted to Children's Hospital, March 22, 1880. (Notes by Dr. S. S. Adams, House Physician)

Four years previously was taken sick with chills, which had recurred, at shorter or longer intervals, sometimes assuming the tertian and sometimes the quotidian form. During the summer of 1878 he was seized with cough, which still continues. After an attack of chills in the fall of 1879, his face began to swell. Since Christmas last he had continued to swell. Now both lower extremities are enormously enlarged, the anasarca extending upwards, covering the abdomen and back. Some puffiness under both eyes. Until recently appetite good; bowels constipated; pulse small and weak; is pale and anæmic; buccal surface pale; tongue pale and small; stomach dilated; spleen enlarged; left lumbar region dull. Amount of urine passed in twenty-four hours, $4\frac{1}{2}$ ounces; 98 per cent. albumen.

Analysis of Urine by Dr. G. N. Ackcr.—A few blood corpuscles; renal epithelium; a few leucocytes; numerous large hyaline and epithelial casts; some smaller ones; some amyloid casts; hyaline casts in a granular condition; epithelial casts and renal epithelium undergoing fatty degeneration.

Examination of Blood.—Increased number of white corpuscles. A hot bath was ordered, to be followed by free purgation with compound jalap powder. The tincture of digitalis, in 5-drop doses, every four hours, was commenced on March 24th and continued till April 4th, on which day he passed 16 ounces of urine. On the 27th of March he had a chill, and 8 grains of the sulphate of quinia was given daily for several days, followed by 5-grain doses three times daily of the citrate of iron and quinia, which was continued till April 4th. During the time the digitalis was given, notwithstanding the increase in the quantity of urine secreted daily, the prepuce and scrotum became so swelled with œdematous fluid, it became necessary (March 30th) to puncture with a needle. The fluid poured out freely in large quantity. Four days after the suspension of the digitalis (April 4th) the anasarca began to increase rapidly. The digitalis was resumed, but the œdema progressed. On the 10th of April pulmonary œdema set in; the dyspnœa was very distressing. Free catharsis failing to relieve it, the hot bath was repeated, followed by the extract of jaborandi in 3-grain doses every three hours. The relief was slight, and during the

night of the 14th the dyspnœa was so threatening that the jaborandi was given every hour in the same doses, but failing to produce free diaphoresis, it was suspended, and $\frac{1}{10}$ th of a grain of elaterium was given at 6 and repeated at 11 P. M. 15th.

16th. Sweated profusely during the night; two liquid stools; $\frac{1}{10}$ th grain of elaterium given at 9 A. M.; repeated at 12 M. Sweated by packing bottles filled with hot water about his body under cover.

17th. Two copious watery stools during the night; dyspnœa less, but breathing bad. The swelling continued increasing, and the legs and feet were so distended that very many punctures with a needle were made in both calves and on the dorsum of each foot. The discharge was very free and copious. From some punctures it spurted out in jets. Three-grain doses of the extract of jaborandi were given at 6, 7, and 8 P. M., and a dose of the mild chloride of mercury at bedtime.

18th. Slept little last night owing to intense pain in neck and throat; oppression more marked; water still escaping from legs; right cheek greatly flushed; sweated profusely; two small stools. During the afternoon the pulmonary œdema increased. Ordered carbonate of ammonia gr. v, every 4 hours, tincture of digitalis gtt. x, every 6 hours, and whiskey \mathfrak{z} ij every 3 hours. Erythema spreading over face.

19th. Erythema less; slept but little; five profuse watery stools last night.

20th. Ten stools since yesterday morning. Extract of jaborandi gr. ix, given during the night.

21st. Sweated profusely last night; nine stools; legs again punctured. Given mild chloride of mercury gr. iij.

22d. Eight consistent stools; urine increased in quantity.

23d. Repeated jaborandi; sweated profusely; urine 9 ounces; albumen 80 per cent. (estimated).

24th. Œdema less; stop carbonate of ammonia; urine 20 ounces; albumen 70 per cent.

25th. Four stools yesterday; urine 24 ounces; albumen 70 per cent.

26th. Tincture of digitalis gtt. v, *ter in die*; urine lost.

27th. Six stools; urine 17 ounces; albumen 80 per cent.

R.—Tinct ferri chlorid. gtt. x.

Ammon. chlorid. gr. v.

Tinct. digitalis, gtt. v.—M.

S.—Three times daily.

R.—Potass. acetat. gr. x.
Tinct. nucis vomicæ, gtt. x.
Infus. quassia, ʒss.—M.
S.—Once daily.

30th. Œdema diminishing; urine 18 ounces; albumen 80 per cent.

May 1st. Bowels constipated; $\frac{1}{10}$ th grain of elaterium given; four stools; œdema of face very great; urine 18 ounces; albumen 70 per cent.

2d. Did not rest very well last night; dyspnœa very great; elaterium $\frac{1}{10}$ th grain; urine 15 ounces; albumen 60 per cent.

3d. Œdema of eyelids very great; breathing very harassing; had a very restless night. Gave carbonate of ammonia gr. v, every 4 hours; urine 20 ounces; albumen 70 per cent.

4th. Œdema about eyelids; coughs very frequently; two stools last night; legs and feet punctured, serum escaped freely. The treatment of the 27th ult. continued; urine 19 ounces; albumen 70 per cent.

7th. Three stools last night; urine 19 ounces; albumen 80 per cent.

8th. Four stools last night; greatly improved; legs still discharging; urine 20 ounces; albumen 70 per cent.

9th. Œdema not so great about face and eyes; tension greatly reduced by the punctures; water still running from legs; abdomen very protuberant; urine 22 ounces; albumen 60 per cent.

10th. Is very well; lively; has a good appetite; serum still oozing; urine 25 ounces; albumen 95 per cent.

11th. Two watery stools; urine 26 ounces; albumen 33 per cent.

13th. Four stools; urine 31 ounces; albumen 50 per cent.

14th. Four stools; œdema hardly perceptible about the face; abdomen getting smaller; urine 21 ounces; albumen 35 per cent.

15th. Four stools; urine 22 ounces; albumen 35 per cent.

16th. Six very watery stools; improving; urine $25\frac{1}{2}$ ounces; albumen 70 per cent.

17th. Five very watery stools; is quite lively; runs about the yard two hours every day; appetite good; urine 30 ounces; albumen 60 per cent.

18th. Four stools; urine 26 ounces; albumen 50 per cent.

19th. Three stools; œdema diminished very much; abdomen and legs still large; urine 30 ounces; albumen 47 per cent.

20th. Four stools; doing well; enjoys himself with the other children in the yard; urine 27 ounces; albumen 45 per cent.

22d. Three watery stools to-day; œdema very much diminished; appetite good; urine 20 ounces.

23d. Vomited after breakfast; four stools; doing well; is out of doors two hours daily; urine 22½ ounces.

24th. Three stools; urine 36 ounces.

25th. Four stools; is comfortable; tongue natural; pulse good; slight œdema below the knees; appetite good; improving in strength; sleeps well; urine 28 ounces.

Analysis of urine, May 30th, 28 ounces; specific gravity 1018; albumen 35 per cent.

Crystals of triple phosphate and urate of ammonium; few casts, mostly of the epithelial variety, long and narrow; some bladder epithelium; different forms of bacteria.

In this case the condition of the kidneys precluded the possibility of cure; nevertheless, the marked improvement exhibited the beneficial effects of good nursing, nutritious diet, and appropriate medication. During the first three weeks of his residence in the hospital, the patient was in constant danger from pulmonary œdema, which at times was so imminent as to threaten immediate death. It was not relieved until after free evacuation of the œdematous fluid by puncturing the integument. At the time the limbs were first punctured he had to be propped up in bed, with his feet hanging over the side. It was not believed at that time to be possible to long defer the final struggle, and the operation was performed simply to relieve the tension and mitigate his suffering.

Preceding the evacuation of the fluid accumulated in the sub-integumental tissue, the patient exhibited a marked insusceptibility to the influence of active cathartics, and an equally remarkable tolerance of digitalis and diaphoretics, phenomena not infrequently observed in cases of chronic Bright's disease. This may have been due to some peculiarity of the constitution; but it has seemed to me to depend upon some inexplicable influence of the extravasated fluid in retarding or preventing the action of drugs. Absorption is impeded, probably, by pressure from over-filling of the submucosa of the alimentary tract, as it is when the subcutaneous tissue is distended; whilst also peris-

talsis is diminished by the serous infiltration of the muscular coat.

I have observed many times, in adult cases of Bright's disease, that when the transudation of fluid seemed to have reached its utmost extent, and cathartics, diuretics, and diaphoretics had failed to produce any effect, that unexpectedly there would begin a copious and continuous secretion of urine, rapidly diminishing the tension, and then drugs might be given with the certainty of effect. This has usually, perhaps always, occurred in persons suffering from uræmia, and I have ascribed the spontaneous diuresis to the effect of urea accumulated in great excess in the blood. In this patient there was not at any time any symptoms of uræmic poisoning, and some other explanation must be sought for the phenomenon to which I have referred.

Under the treatment begun on April 27th, the boy has continuously improved; the amount of urine increasing daily, the swelling diminishing, and his strength improving.

CASE III.—William W., aged 10 years; mulatto; admitted May 8, 1880. (Notes by Dr. T. F. Mallan, House Physician.)

Had been sick for two months. Was first taken with chills and "pain in stomach." The chills at first were quotidian, later tertian. Afterwards his belly began to swell. Now there is general anasarca, involving the lower extremities and entire trunk; under the chin, obliterating the neck, an enormous œdematous swelling; face much swollen, closing both eyes; the prepuce and scrotum distended. The tongue small, reddened, and coated; pulse 100, intermittent; appetite good; bowels irregular; temperature, 99.6°. Urine small in quantity; 80 per cent. albumen; analysis by Dr. Geo. N. Acker.

A few blood corpuscles and leucocytes. Renal epithelium and hyaline casts. The greater number of hyaline casts were narrow and long, a few broad and short. A large number of waxy casts; not many epithelial casts. Various forms of bacteria; also triple-phosphate crystals.

Ordered 10 grains compound jalap powder, which produced very free catharsis. On the 12th his temperature ran up to 102.8°. Given sulphate of quinine.

May 13. Œdema has greatly subsided under chin. Had three watery stools. Ordered—

R.—Tinct. ferri chlorid. gtt. x.
 Ammon. chlorid. gr. x.
 Tinct. digitalis, gtt. v.—M.
 S.—Three times daily.

R.—Potass. acetat. gr. x.
 Tinct. nucis vomicis, gtt. x.
 Infus. quassia, ℥ss.—M.
 S.—Once daily.

14th. Edema still great; great tenderness around navel; two stools.

15th. Edema diminishing; urine 8 ounces; albumen 70 per cent.

16th. Edema has subsided greatly. Is comfortable, with the exception of a slight cough. Bowels open twice daily; urine 16 ounces; albumen 60 per cent.

17th. Edema about neck and face disappeared entirely; still remains in abdomen and legs; urine 9 ounces; albumen 60 per cent.

18th. Is doing well; edema still present in legs and abdomen; urine 30 ounces; albumen 60 per cent.

20th. Two stools to-day; urine 28 ounces; albumen 60 per cent.

21st. Urine 24 ounces.

22d. Urine 28 ounces.

23d. Urine 33 ounces.

24th. Urine 30 ounces.

25th. Urine 29 ounces.

Analysis of Urine, May 30th. 36 ounces; sp. gr. 1014; albumen, 15 per cent.; a number of crystals of triple phosphate; few hyaline casts, short and narrow; some kidney epithelium.

This case was more unfavorable than the preceding one; the subintegumental transudation involved the entire surface, excepting the hairy scalp. Under the chin, and projecting beyond it, was an enormous œdematous swelling, extending downward to the manubrium sterni. So great was the effusion under the skin covering the abdomen, that it was impossible to determine the presence of fluid in the peritoneal cavity.

In this case the action of medicines was more prompt and relief sooner obtained. A single dose of 10 grains of the compound jalap powder produced very free catharsis. Having observed the rapid amelioration of the symptoms in Case II.,

following the administration of the combination of iron, digitalis, and chloride of ammonium, and a daily dose of the acetate of potassium and tincture of nux vomica in the infusion of quassia, this patient was put upon the same treatment on the fifth day after his admission into the hospital, with the same happy effect. It combined the elements of increasing heart power, improving the quality of the blood, diuresis, and invigorating the appetite and digestion, thus fulfilling the paramount indications in the management of these cases.

In these cases of chronic Bright's disease, life is usually terminated by one of three complications, uræmia, pulmonary œdema, or cardiac insufficiency. Unless destroyed by uræmic poisoning, the patients usually survive as long as heart power can be maintained, for the œdema of the lungs is generally an expression of heart feebleness. Heart power must be maintained by improvement of the blood and tonics. Nutritious and easily digested food and chalybeates, constitute an essential part of the treatment. The choice of ferruginous preparations is of great importance. I have usually preferred the citrate of iron and quinine, because of its special value in the treatment of chronic malarial poisoning; but the tincture of the chloride will often be found preferable, because of its certainty, and availability in combination with other medicines. Previous to the administration of iron, in any form, it will frequently be necessary to employ, or use in connection with it, some stomachic or digestive tonic. The tincture of nux vomica or strychnia has usually been sufficient. The combination of the acetate of potassium and tincture of nux vomica, in the infusion of quassia—previously referred to, and suggested by Dr. Beyerly Robinson—has proven exceedingly valuable as an invigorator of the appetite and digestion. As a pure heart tonic, there is no drug of equal value and certainty of good effect as digitalis. I accept fully and completely the recent views in regard to the physiological action of digitalis, and as positively reject the older teaching of its depressant influence upon heart power. Unfortunately, the theory of its action, until recently very generally taught, and the fear of cumulative power, which I have never witnessed, has deterred many practitioners from its continuous use for a sufficient period to secure and maintain any marked increase of the power of the heart, and tension of the arteries. Failure has been frequently ascribed to its depressing influence,

when, in fact, it was due to the absence of any effect, because of its employment in insufficient quantity for a very brief period. By reference to the clinical notes, it will be seen that, in Case II., the tincture of digitalis was given in five-drop doses every four hours, for ten consecutive days, to a boy ten years of age; and, subsequently continued in the same doses three times a day, for five successive weeks; and in Case III., it has been given continuously during several weeks. In neither case has any toxic action been observed. So long as the heart's beats are above, and the tension of the arteries below a normal standard, and the daily discharge of urine is about the quantity in health, or increasing, digitalis may be continued. Its toxic power will usually be exhibited, either by very rapid slowing of the pulse, or sudden diminution in the quantity of urine, associated with high arterial tension. I have used it in substance, infusion, and tincture, and prefer the last form, except when I wish to avoid the disagreeable taste; then substituting the granules of digitalin.

All observers agree in regard to the value of catharsis, diuresis, and diaphoresis, as methods of evacuating the fluid accumulations; but there is great contrariety of opinion as to the efficiency of the members of the several classes of therapeutic agents, and their admissibility in special cases. Active catharsis, when easily induced, and free from exhaustion, often affords speedy, but partial relief. As a rule, it cannot be continued long enough, without danger of greatly increasing the debility, or causing irritation of the alimentary tract. The bitartrate of potassium and the tartarus boraxatus are favorite remedies with many, and very efficient; the compound jalap powder is a safe, though not a very certain cathartic, except in large doses, and is then apt to occasion tenesmus. Elaterium, in doses from one-twelfth to one-eighth of a grain is very prompt, but is admissible in comparatively few cases, both because of its nauseating quality, and the danger of collapse. In cases of uræmic poisoning, when the stomach will tolerate it, its energetic action as a hydragogue cathartic, gives it the preference. Whether it possesses the power of eliminating urea through the intestinal mucous membrane is a disputed question. I have several times witnessed the rapid disappearance of large collections of fluid in the peritoneal cavity by the continuous use of this drug.

Eberlé's formula¹ (omitting the tartar emetic), has proven the most certain and satisfactory cathartic that I have employed in dropsies.

Diuretics are divided into two classes; one, like digitalis and squill, increasing the power of the heart and arterial tension, the other acting upon the kidneys. Fothergill styles digitalis a hydragogue diuretic, because, by increasing blood-pressure, it augments the transudation of the water through the kidneys, without increasing the quantity of solid constituents of the urine; whereas, those which act directly upon the excretory function of the kidneys, augment the elimination of solids. In those cases of chronic kidney disease, complicated with cardiac insufficiency, the continuous use of digitalis is demanded. It may frequently be combined, with great advantage, with some of the second class; with the acetate of potassium, when lithiasis is present, or with nitre, juniper, or buchu, when it is desirable to increase the excretion of the solids. Experimenters insist that digitalis has no diuretic action when given to a healthy person. In the absence of cardiac insufficiency it is useless, and sometimes detrimental. Excepting digitalis, when properly employed, diuretics are very unsatisfactory remedies. Sometimes the sweet spirits of nitre, like others of the same class, will produce an extraordinary flow of urine; and, again, when given under circumstances apparently precisely similar, it will prove utterly valueless. The class of drugs which are supposed to excite the secreting cells of the kidneys like buchu; and those which are believed to act upon the kidney circulation, independently of any effect upon the general circulation, are unreliable diuretics. I know of no one, or combination of such drugs, which can be given with a certainty of increasing the flow of urine. Some fruits produce in some persons very copious diuresis; peaches in a few, and grapes in very many, will prove valuable aids in promoting the flow of urine.

In cases of great emergency diaphoresis is the preferable method of affording relief, because more certainly, easily, and efficiently produced than either catharsis or diuresis. The hot-air bath, as I have previously described it, is more effective than a hot-water bath, and more speedy and certain than jaborandi. This drug, either in substance, infusion, fluid or solid extract (the

¹ R.—P. cream of tartar, ℥jss; P. sulphat. potassæ, ℥ss; P. scillæmaritim. ℥ij; Tart. antimonii, gr. ij.—M. S.—One teaspoonful four or five times daily. (Eberlé; Treatise on Practice of Medicine, vol. ii. p. 446, 1831.)

latter preparation I prefer), rarely fails, when given in sufficient quantity, to produce profuse sweating; but it is not entirely free from danger in cases of advanced heart degeneration. In uræmic intoxication or coma the bath is always admissible, and may be assisted by the hypodermic use of pilocarpin. The effect of *jaborandi* is more durable than the bath, and when necessary to prolong the sweating it will be judicious to follow the bath with *jaborandi*, and when prudent to renew the diaphoresis daily or oftener, it is best to alternate the two remedies. After a free diaphoresis, a moderate sweating may be continuously kept up, as may be desirable, by the use of *jaborandi* in proper doses at shorter or longer intervals. I have many times employed the oil of juniper by inhalation in connection with diaphoretic and cathartic remedies, but am doubtful of its value.

In the treatment of these conditions it is never wise to rely exclusively upon evacuation either by the alimentary tract, kidneys, or skin. In most cases all may be advantageously employed, and a judicious combination of resources will yield the best results; but whatever method may be preferred, the treatment should not be suspended or abandoned until the daily secretion of urine is equal in quantity to or greater than the discharge in health.

The propriety of the evacuation of œdematous fluid by incision, scarification, or puncture of the skin, must be left to the judgment of the practitioner. Sometimes it is necessary to avoid rupture, and in other cases it will afford very speedy relief. In old subjects, when the skin is of low vitality, there is danger of cellulitis or sloughing. Incision ought never be practised; scarification is less objectionable; but puncturing with a round instrument or needle may be done, especially in young subjects, with great benefit. When the skin is pale or semi-transparent but little blood will be lost, and when the punctures are quickly made but little pain attends the operation. If sufficiently numerous about the calves and back of the feet, the discharge will be copious and continue sometimes for several days. The rapidity of the loss of fluid will depend upon the degree of tension. After healing, the punctures or points of exit will be marked by redness, which may remain for a long time. A recent writer has suggested the insertion of suitably constructed canulæ in the integument, so as to provide apertures of exit for fluids, as it may escape into the subcutaneous tissue and thus prevent accumulation.

